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Amendments to the Drawings:

The attached replacement sheet of drawings includes changes to Fig. 2 and replaces the original sheet including Fig. 2.

Attachments following last page of this Amendment:

Replacement Sheet (1 page)

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REMARKS

Reconsideration and allowance of the above referenced application are respectfully requested.

Initially, Applicants deeply apologize for the typo in the previous amendment that stated "rejection of myths". In fact, this was written intended to refer to the "rejection of Neff". The undersigned apologizes to the extent that this was wrongly taken.

Turning then to the rejection itself, the drawings stand objected to under Rule 83 as not showing the subject matter of Claim 2, where the smaller coil has two or more windings. In response, Figure 2 has been amended to show two separate windings on the inside coil.

Claims 1-3, and 62-69 stand rejected under 35 USC 103 as allegedly being unpatentable over Neff in view of the admitted prior art and alleged knowledge in the art. These contentions are respectfully traversed.

Turning initially to the admitted prior art, on pages 8 through 9 of the official action response dated July 18, 2005, Applicants only admitted that the prior art described attempting to reduce Barkhausen and electrical noise in conventional LVDT's. The statement that non-magnetic coil forms are well-known in the art is respectfully traversed. To the extent that

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this is based on personal knowledge of the examiner, then a reference in support of this feature is requested.

Moreover, the statement in the official action that "details of noise removing are not recited in the rejected claims" is again respectfully traversed. Claim 1, for example, states that the RMS noise represents less than 2.1 nm of movement between the coils. Certainly this defines the amount of noise removal. Therefore, the statement that noise reduction is not recited in the claims is respectfully traversed.

The statement on page 6 that the coil forms "are normally plastic bobbins" is again respectfully traversed. If this is based on personal knowledge of the examiner, then a reference citing this is requested. The examiner's request for applicant to note references on the PTO 892 is noted, however, no such references are known to the undersigned.

Finally, turning to the actual reference and rejection, Claim 1 defines a displacement transducer where the coil forms can be displaced relative to each other, where at least one winding on the movable coil form is magnetically coupled to the other, and having electronic circuitry "generating a signal responsive to relative displacements between the coil forms in the range of microns or less and having an RMS noise representing less than 2.1 nm of movement between the coils".

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With all due respect, Neff is much less sensitive than the displacement sensor that is claimed. Neff describes a number of configurations of the LVDT primary and LVDT secondary coils. One of those coils has the primary wound on an air core. Neff refers to the electronics that are required to complete a functioning LVDT using the following language:

"Also in each modification [of the LVDT coils] the wiring diagram including leads from the coils to a circuit including a vacuum tube oscillator and electronic volt meter circuit are similar to each other and generally similar to that shown in the US patent to Joseph J. Neff for electrical caliber, number 2, 364, 237 dated December 5, 1944".

See column 2 of the Neff patent, lines 23-29.

Hence, the sensitivity of the electronics must be that as considered in the earlier US patent 2,364,237. Neff '237 characterizes the sensitivity by stating "the voltmeter is so designed that its sensitivity may be adjusted depending on the precision desired in the measurement of work. The pickup mechanism is capable of accurate measurements in the orders of tenths of thousands of an inch" Neff '237, column 2, lines 10-15.

1/10,000th of an inch is 2.54 μ . Claim 1 defines an apparatus that has "electronic circuitry generating a signal responsive to relative displacements between the coil forms in

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the range of microns or less". Hence, the apparatus is more sensitive than that described in Neff.

In addition, Claim 1 defines that the RMS noise represents less than 2.1 nm of movement between the coils. Since the accurate measurements are on the order of tenths of thousandths of an inch, this is clearly orders of magnitude greater than the claimed "2.1 nm of movement".

Finally, while the admitted prior art does describe the advantages of removing Barkhausen noise, it also describes that the known schemes for removing that noise are ineffective: increasing the primary drive current, and others described in the specification on page 5. The specification also describes that some LVDT designs have eliminated that noise without understanding that they were doing, by "substituting an air core for the ferromagnetic core of the conventional LVDT". Clearly substituting the air core, as may have been done in Neff, does not make it obvious to do this in order to form "an RMS noise representing less than 2.1 nm of movement between the coils".

Therefore, Claim 1 should be allowable for these reasons.

Claim 62 defines that the first and second coil forms collectively form "means for reducing Barkhausen noise...". According to the patent office's examination regulations, this claim can only be found obvious if the prior art "performs the function specified in the claims" (MPEP 2183). Therefore, a

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proper rejection of this claim must show that the reference actually reduces the Barkhausen noise. Nothing in the cited prior art teaches or suggests this feature.

The remaining claims should be allowable for similar reasons. Claim 64 requires the coil forms made of non-ferromagnetic material. Neff teaches an air core. An air core is not a core made of "non-ferromagnetic material coil form". In fact, the air core is not a coil form at all. Therefore, this does not render obvious Claim 64. Claims 65 and 66 should be allowable for analogous reasons. Claim 67 defines that the coil forms are "means for reducing Barkhausen noise". This is further patentable over the cited prior art which teaches nothing about using this specific structure to reduce the Barkhausen noise.

Finally, Claim 69 defines a method of operating a transducer which includes "reducing an effect of Barkhausen noise on the coil forms as they move". Nothing in the cited prior art teaches or suggests this feature. The admitted prior art in fact teaches that the techniques disclosed therein do not actually do that.

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition,

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because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the above amendments and remarks, therefore, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

Please apply the \$60 one month extension of time fee, and any other applicable charges or credits, to Deposit Account No. 06-1050.

Respectfully submitted,

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Scott C. Harris
Reg. No. 32,030

Fish & Richardson P.C.
PTO Customer No. 20985
12390 El Camino Real
San Diego, California 92130
(858) 678-5070 telephone
(858) 678-5099 facsimile

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